



U.S. DEPARTMENT OF
ENERGY

Office of Science

HIGH FLUX ISOTOPE REACTOR

Presented to

**TECHNOLOGY INNOVATION AND INTERNATIONAL PARTNERSHIP
DOE USED NUCLEAR FUEL AND HIGH LEVEL WASTE**

by:

**Dave Rosine
DOE ORNL Site Office**

**September 16, 2010
Crowne Plaza**

- **The High Flux Isotope Reactor (HFIR) is part of the Oak Ridge National Laboratory (ORNL) Complex and is operating with Highly Enriched Uranium Fuel at 85 megw.**
- **The primary purpose is research although some isotopes for medical use are produced.**
- **HFIR began operation in 1965 and current plans are for operation until around 2040.**
- **In 2005 HFIR added cold source capability and an expanded small angle scattering guide hall.**
- **HFIR core is inner and outer element arrangement and Be reflected.**
- **Fuel Cycle is about 28 days and an average 6 cycles per year.**

- **HFIR has pool storage capability for about 90 elements and currently about 50 positions are filled. A three year cooling time is necessary prior to shipment.**
- **Spent Fuel Elements are shipped to the Savannah River Site (SRS) L Basin for storage and disposition.**
- **The current campaign began in 1996 through use of a GE-2000 Cask and 111 shipments have been made to date.**
- **About 10–12 shipments are scheduled to be made each year.**
- **These shipments are subject to Commercial Vehicle Safety Alliance Level 6 Inspection Criteria which is performed by Tennessee Highway Patrol, Tennessee Oversight Agency, Tennessee Emergency Management Agency, and are escorted through three states.**

- **SRS L Basin is reaching capacity for HFIR elements and will be full late 2011 at current shipping schedule.**
- **SRS H Canyon has dissolution process and has possible potential for startup in 2015 with HFIR elements, backfilling capabilities could begin on a 1 for 1 basis.**
- **SRS has potential for closing to all Spent Fuel shipments at end of Foreign Research Reactor Fuel Program around 2019.**
- **Dry storage on HFIR site was considered in early 90's and could be reconsidered if necessary but new dry storage guidance has been issued since then.**

- **HFIR is being considered to be changed to Low Enriched Uranium around 2015.**
- **Safety basis operating data will need to be reviewed and updated.**
- **New transportation packages will need to be designed, certified, and fabricated due to additional element weight.**
- **Time may be a factor in meeting the 2015 schedule.**